

### REMARKS/ARGUMENTS

Claims 27 – 54 are newly presented for consideration and examination in view of the following remarks. Claims 1 – 26 have been cancelled.

In the outstanding Office Action, claims 9, 14 and 17 were objected to due to informalities; claims 25 and 26 were rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,879,158 to Doyle et al. (hereinafter referred to as “the Doyle et al. ‘158 patent”); claims 9 – 16, 25 and 26 were rejected under 35 U.S.C. §103(a) as being unpatentable over the Doyle et al. ‘158 patent in view of U.S. Patent No. 5,338,198 to Wu et al. (hereinafter referred to as “the Wu et al. ‘198 patent”); claims 9 – 24 were rejected under 35 U.S.C. §101 as claiming the same invention as that of claim 1 – 16 of prior U.S. Patent No. 6,739,869 (hereinafter referred to as “the prior ‘869 patent”); and claims 25 and 26 were rejected under the judicially created doctrine of obviousness-type double patenting.

By this Response and Amendment,

claims 10 – 26 have been canceled thereby rendering the rejections thereto moot; and

claims 27 – 54 have been newly added.

Support for newly added claims 27 – 54 can be found in col. 1, lines 55 – 63 and col. 2, lines 13 – 16 of U.S. Patent No. 6,739,869, which is the parent to the present application and which has been incorporated into the present application by reference. Therefore, it is respectfully submitted that the above amendments and corrections do not introduce any new matter to this application within the meaning of 35 U.S.C. §132.

### **Objections To The Claims**

The Examiner objected to the claims due to informalities. Specifically, the Examiner asserted that, in line 11 of claim 9 and in line 14 of claim 14, the term “teeth” should be –tooth–; and in lines 8 and 9 of claim 17, the Examiner believed that the phrase “is parallel” should be –that is parallel –.

### **Response**

By this Response and Amendment, claims 9, 14 and 17 have been canceled thereby rendering the rejections thereto moot.

Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the objections to the claims.

### **Rejections Under 35 U.S.C. §102(b)**

The Examiner rejected claims 25 and 26 as being anticipated by the Doyle et al. ‘158 patent.

### **Response**

Initially, Applicants note that the Doyle et al. ‘158 patent has a U.S. Patent No. of 5,879,158 rather than 5,870,158, which the Examiner used in the outstanding Office Action. Thus, Applicants respectfully request that the Examiner take steps to note the proper U.S. Patent No. in the record.

By this Response and Amendment, claims 25 and 26 have been canceled thereby rendering the rejections thereto moot.

Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw

the rejections under 35 U.S.C. §102(b).

**Rejections Under 35 U.S.C. §103(a)**

The Examiner rejected claims 9 – 16, 25 and 26 as being unpatentable over the Doyle et al. '158 patent in view of the Wu et al. '198 patent.

**Response**

By this Response and Amendment, claims 9 – 16, 25 and 26 have been canceled thereby rendering the rejections thereto moot.

Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the rejections under 35 U.S.C. §103(a).

**Rejections Under 35 U.S.C. §101**

The Examiner rejected claims 9 – 24 under 35 U.S.C. §101 as claiming the same invention as that of claims 1 – 16 of the prior '869 patent because the claims are the same.

**Response**

By this response and amendment, claims 9 – 24 have been canceled thereby rendering the rejections thereto moot.

Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the rejections under 35 U.S.C. §101.

**Obviousness-Type Double Patenting Rejection**

The Examiner rejected claims 25 and 26 under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 17 and 18 of the prior '869

patent.

### **Response**

By this response and amendment, claims 25 and 26 have been canceled thereby rendering the rejections thereto moot.

Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the obviousness-type double patenting rejection.

### **MISCELLANEOUS**

By this Response and Amendment, claims 27 – 54 have been newly added. These new claims are directed toward a method for selecting orthodontic components for use in a real life treatment. Applicants assert that claims 27 – 54 are patentable over the cited references for at least the reasons set forth below.

#### **The Doyle et al.'158 Patent Does Not Anticipate New Claims 27 – 54**

With respect to the Examiner's anticipation rejections of the now canceled claims, the Examiner stated that the structure recited in claims 25 and 26 is anticipated and that "the intended use [of the structure] with a program or software is merely intended use and is given no patentable weight." As the newly submitted set of claims recites "[a] *method* for selecting orthodontic components," and the new set of claims no longer contains any system claims, the anticipation rejection is not relevant to the new claims.

Additionally, newly submitted claims 27 – 54 are not anticipated by the cited reference because all of the elements of new independent claims 27 and 50 are neither disclosed, taught, nor suggested in the cited reference. For a reference to anticipate an invention, all of the

elements of that invention must be present in the reference. The test for anticipation under section 102 is whether each and every element as set forth in the claim is found, either expressly or inherently, in a single prior art reference. *Verdegaal Bros. v. Union Oil Co. of California*, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987); MPEP §2131. The identical invention must be shown in as complete detail as is contained in the claim. *Richardson v. Suzuki Motor Co.*, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989); MPEP §2131.

New independent claim 27 recites: “[a] method for selecting orthodontic components for use in an orthodontic treatment of an individual, the method comprising: (i) in a computer: (a) *selecting a virtual set of orthodontic components* representing components that may be used in an orthodontic treatment, (b) providing a first virtual three-dimensional (3D) image of a 3D model of the individual’s teeth comprising teeth of at least one jaw, the model being manipulable so as to allow its viewing from a desired direction, (c) associating the virtual set of components with the teeth in said virtual image in a manner resembling that in which such components are associated with teeth in an orthodontic treatment, to obtain a second image of said 3D model with said components associated therewith, and (d) using a set of rules, including at least one rule, defining the effect of said set of components on said teeth, computing the manner of movement of the teeth as a result of said effect, so as to obtain a third image comprising the teeth model following the virtual treatment; and (ii) selecting a set of orthodontic components for use in an orthodontic treatment resembling and having same properties as said virtual set.” *Present Application*, claim 27, *emphasis added*.

And new independent claim 50 recites: “[a] method for selecting real-life orthodontic components for use in an orthodontic treatment of an individual, the method comprising: (i) in a computer: (a) *selecting a virtual set of orthodontic components* representing real-life orthodontic

components that may be used in an orthodontic treatment, said virtual set of components resembling and having same properties as said real-life set, (b) providing a first virtual three-dimensional (3D) image of a 3D model of the individual's teeth comprising teeth of at least one jaw, the model being manipulable so as to allow its viewing from a desired direction, (c) associating the virtual set of components with the teeth in said virtual image in a manner resembling that in which such components are associated with teeth in an orthodontic treatment, to obtain a second image of said 3D model with said components associated therewith, and (d) using a set of rules, including at least one rule, defining the effect of said set of components on said teeth, computing the manner of movement of the teeth as a result of said effect, so as to obtain a third image comprising the teeth model following the virtual treatment; and (ii) repeating step (i) a plurality of times until said substep (d) provides a desired result of the virtual treatment, wherein each time step (i) is repeated at least one of the following is changed:— (A) in step (a) at least one said orthodontic components is changed for a different orthodontic component; (B) in step (b) said association of at least one said orthodontic component with respect to a tooth in said virtual image is changed with respect to the preceding association.” *Present Application*, claim 50, *emphasis added*.

The Doyle et al. ‘158 patent discloses an orthodontic bracketing system and method. The method includes generating a digitized three-dimensional image of teeth, displaying conventional archwires on a video display in close juxtaposition to upper and lower teeth, loading digitized coded torque and angulation information for conventionally sized and shaped brackets, determining the amount of movement of each tooth as a result of the torque and angulation information, and then repositioning the virtual image of the tooth until a positional value determined from the torque and angulation information equals the positional value of the image

of the tooth. The effect of the conventional brackets on each tooth is determined by comparing a center axis of each tooth with the coded torque and angulation information for the bracket associated with that tooth.

In contrast to the presently claimed invention, the Doyle et al. '158 patent does not disclose a step of “*selecting* a virtual set of orthodontic components representing components that may be used in an orthodontic treatment,” as recited in new independent claim 27 or a step of “*selecting* a virtual set of orthodontic components representing real-life orthodontic components that may be used in an orthodontic treatment,” as recited in new independent claim 50. Rather, the method disclosed in the Doyle et al. '158 patent is limited to “conventional archwires” and “conventional brackets.” The Doyle et al. '158 patent bases its torque and angulation information on these conventional archwires and conventional brackets as shown in steps 20 and 28, respectively. Thus, the Doyle et al. '158 patent is limited to conventional archwires and conventional brackets and as such, there is no need for, and thus no disclosure of a step of *selecting* a virtual set of orthodontic components in the Doyle et al. '158 patent.

One of the advantages to selecting a virtual set of orthodontic components is the capability to provide a dentist or technician with the option of altering the virtual treatment for a patient by altering the virtual components selected. Depending on the patient's treatment needs and possibly even depending on a patient's cosmetic considerations, a dentist or technician can follow the methods recited in claims 27 and 50 a plurality of times beginning with different components each time and arriving at different treatment results. Thus, a dentist or technician is better able to advise a patient on optimum treatment options.

As the step of “*selecting* a virtual set of orthodontic components...” is neither disclosed, taught nor suggested by the Doyle et al. '158 patent, the Doyle et al. '158 patent does not

anticipate the presently claimed invention.

Accordingly, Applicants respectfully request that the Examiner allow new independent claims 27 and 50 and allow all of the claims dependent thereon.

### **New Claims 27 – 54 Are Not Obvious In View Of The Cited References**

Newly submitted claims 27 – 54 are patentable over the cited references because neither of the cited references teaches or suggests all of the features of the presently claimed invention. The arguments above with respect to the Doyle et al. '158 patent are hereby incorporated by reference.

To establish a *prima facie* case of obviousness, the Examiner must establish: (1) that some suggestion or motivation to modify the references exists; (2) a reasonable expectation of success; and (3) that the prior art references teach or suggest all of the claim limitations. *Amgen, Inc. v. Chugai Pharm. Co.*, 18 USPQ2d 1016, 1023 (Fed. Cir. 1991); *In re Fine*, 5 USPQ2d 1596, 1598 (Fed. Cir. 1988); *In re Wilson*, 165 USPQ 494, 496 (CCPA 1970).

New independent claim 27 recites: “[a] method for selecting orthodontic components for use in an orthodontic treatment of an individual, the method comprising: (i) in a computer: (a) *selecting a virtual set of orthodontic components* representing components that may be used in an orthodontic treatment, (b) providing a first virtual three-dimensional (3D) image of a 3D model of the individual’s teeth comprising teeth of at least one jaw, the model being manipulable so as to allow its viewing from a desired direction, (c) associating the virtual set of components with the teeth in said virtual image in a manner resembling that in which such components are associated with teeth in an orthodontic treatment, to obtain a second image of said 3D model with said components associated therewith, and (d) using a set of rules, including at least one rule, defining



the effect of said set of components on said teeth, computing the manner of movement of the teeth as a result of said effect, so as to obtain a third image comprising the teeth model following the virtual treatment; and (ii) selecting a set of orthodontic components for use in an orthodontic treatment resembling and having same properties as said virtual set.” *Present Application*, claim 27, *emphasis added*.

And new independent claim 50 recites: “[a] method for selecting real-life orthodontic components for use in an orthodontic treatment of an individual, the method comprising: (i) in a computer: (a) *selecting a virtual set of orthodontic components* representing real-life orthodontic components that may be used in an orthodontic treatment, said virtual set of components resembling and having same properties as said real-life set, (b) providing a first virtual three-dimensional (3D) image of a 3D model of the individual’s teeth comprising teeth of at least one jaw, the model being manipulable so as to allow its viewing from a desired direction, (c) associating the virtual set of components with the teeth in said virtual image in a manner resembling that in which such components are associated with teeth in an orthodontic treatment, to obtain a second image of said 3D model with said components associated therewith, and (d) using a set of rules, including at least one rule, defining the effect of said set of components on said teeth, computing the manner of movement of the teeth as a result of said effect, so as to obtain a third image comprising the teeth model following the virtual treatment; and (ii) repeating step (i) a plurality of times until said substep (d) provides a desired result of the virtual treatment, wherein each time step (i) is repeated at least one of the following is changed:– (A) in step (a) at least one said orthodontic components is changed for a different orthodontic component; (B) in step (b) said association of at least one said orthodontic component with respect to a tooth in said virtual image is changed with respect to the preceding association.” *Present Application*, claim 50,

*emphasis added.*

The Wu et al. '198 patent discloses a dental modeling simulator that operates by measuring molded impressions of teeth on a support table, the support table defining an X-Y plane. A laser probe detects Z-axis measurements in a first position; the molded impression is then tilted and the measuring process is repeated to obtain theretofore hidden measurements. A virtual three-dimensional model is thus produced. The Wu et al. '198 patent discloses that the data representing the three-dimensional model can be manipulated by customized computer graphics software so that the three-dimensional model can be magnified or viewed from any perspective.

The Wu et al. '198 patent does not make up for the shortcomings of the Doyle et al. '158 patent. The Wu et al. '198 patent does not teach or suggest a step of "*selecting* a virtual set of orthodontic components representing components that may be used in an orthodontic treatment" as recited in new independent claim 27 or a step of "*selecting* a virtual set of orthodontic components representing real-life orthodontic components that may be used in an orthodontic treatment," as recited in new independent claim 50. As the step of "selecting a virtual set of orthodontic components" is neither taught nor suggested by the Wu et al. '198 patent, the Wu et al. '198 patent does not render the presently claimed invention obvious.

In sum, neither the Doyle et al. '158 patent nor the Wu et al. '198 patent, alone or in combination, teaches or suggests the step of "*selecting* a virtual set of orthodontic components...." As such the cited references do not render the presently claimed invention obvious.

Accordingly, Applicants respectfully request that the Examiner allow newly submitted claims 27 and 50 and allow all claims dependent thereon.

### CONCLUSION

In light of the foregoing, Applicants submit that the application is now in condition for allowance. If the Examiner believes the application is not in condition for allowance, Applicants respectfully request that the Examiner contact the undersigned attorney if it is believed that such contact will expedite the prosecution of the application.

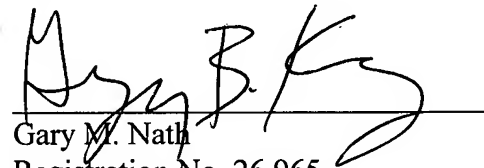
In the event this paper is not timely filed, Applicants petition for an appropriate extension of time. Please charge any fee deficiency or credit any overpayment to Deposit Account No. 14-0112.

Respectfully submitted,

**NATH & ASSOCIATES PLLC**

Date: March 23, 2005  
NATH & ASSOCIATES PLLC  
1030 Fifteenth Street, N.W.  
Sixth Floor  
Washington, DC 20005  
(202) 775-8383

By:

  
\_\_\_\_\_  
Gary M. Nath  
Registration No. 26,965  
Gregory B. Kang  
Registration No. 45,273  
Derek Richmond  
Registration No. 45,771  
Customer No. 20259